

WE CLAIM:

1 *sub a*

- 2 1. A method for generating a hepatic cell culture comprising co-
- 3 culturing hepatocytes and nonparenchymal cells, in the presence of growth factors and a
- 4 matrix coated with at least one biologically active molecule that promotes cell adhesion,
- 5 proliferation or survival under conditions sufficient to allow for the proliferation of
- hepatocytes that retain hepatic function.

1 *sub b*

- 2 2. The method of claim 1 wherein the hepatocytes and
- nonparenchymal cells are derived from a liver tissue sample.

- 1 3. The method of claim 1 wherein the matrix is in the form of
- 2 polystyrene beads.

- 1 4. The method of claim 1 wherein the matrix is coated with an
- 2 extracellular matrix protein.

- 1 5. The method of claim 1 wherein the matrix is coated with type I
- 2 collagen.

- 1 6. The method of claim 1 wherein the growth factor is epidermal
- 2 growth factor.

1 7. The method of claim 1 wherein the growth factor is hepatocyte  
2 growth factor.

1 8. A method for generating a three-dimensional hepatic cell culture  
2 system comprising:  
3 contacting a three-dimensional support matrix with a  
4 hepatic cell culture comprising hepatocytes and  
5 nonparenchymal cells bound to a matrix coated with at least  
6 one biologically active molecule that promotes cell  
7 adhesion, proliferation or survival;  
8 under conditions sufficient to allow for the proliferation of the  
9 hepatic cell culture to form a three-dimensional hepatic cell  
10 structure.

1 9. The method of claim 8 wherein the hepatocytes and  
2 nonparenchymal cells derived from a liver tissue sample.

1 10. The method of claim 8 wherein the matrix is in the form of a  
2 biomatrix gel.

1 11. The method of claim 8 wherein the matrix is coated with an  
2 extracellular matrix protein.

1 12. The method of claim 1 wherein the matrix is coated with type I  
2 collagen.

1 13. The method of claim 8 wherein the matrix further comprises  
2 growth factors incorporated into said matrix.

1 14. A population of matrix/hepatic cell clusters comprising  
2 hepatocytes and nonparenchymal cells associated with a matrix coated with at least one  
3 biologically active molecule that promotes cell adhesion, proliferation or survival.

1 15. A composition comprising matrix/hepatic cell clusters grown on a  
2 three-dimensional support matrix wherein said matrix hepatic cell clusters comprising  
3 hepatocytes and nonparenchymal cells bound to a matrix coated with at least one  
4 biologically active molecule that promotes cell adhesion, proliferation or survival.

1 16. A three-dimensional tissue culture matrix prepared by a process  
2 comprising:  
3 contacting a three-dimensional support matrix with a  
4 hepatic cell culture comprising hepatocytes and

5 nonparenchymal cells bound to a matrix coated with at least  
6 one biologically active molecule that promotes cell  
7 adhesion, proliferation or survival;  
8 under conditions sufficient to allow for the proliferation of the  
9 hepatic cell culture.

1 17. A method for providing hepatic function in a subject having a liver  
2 disorder comprising administering to said subject a three-  
3 dimensional tissue culture matrix prepared by a process  
4 comprising:

5 contacting a three-dimensional support matrix with a  
6 hepatic cell culture comprising hepatocytes and  
7 nonparenchymal cells bound to a matrix coated with at least  
8 one biologically active molecule that promotes cell  
9 adhesion, proliferation or survival, under conditions  
10 sufficient to allow for the proliferation of the hepatic cell  
11 culture;

12 in an amount sufficient to reduce the symptoms associated with the  
13 liver disorder.

1 18. The method of claim 17 wherein the liver disorder is cirrhosis of  
2 the liver.

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19. The method of claim 18 wherein the liver disorder is hepatitis.

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